



Final report of the panel for
THE 2014 REVIEW OF THE SOUTH AFRICAN MEDICAL RESEARCH COUNCIL



THE SOUTH AFRICAN MEDICAL RESEARCH COUNCIL

COVERING LETTER

TO: PRESIDENT GLENDA GRAY AND THE EXECUTIVE MANAGEMENT OF THE SOUTH AFRICAN MEDICAL RESEARCH COUNCIL, THE CHAIR AND MEMBERS OF THE SOUTH AFRICAN MEDICAL RESEARCH COUNCIL BOARD, AND TO WHOM ELSE IT MAY CONCERN

We are pleased to submit our review report on completion of our work, performed as per the general specifications of our brief. We have concentrated on a high-level analysis of key documentary materials and insights that we have mustered from a large number of individual interviews we conducted between 19 and 24 November 2014. We were pleased to receive and incorporate error-corrections from the MRC President and other Executive Management Committee members in respect of a near-final draft version of the report.

We have sought, wherever possible, to suggest and recommend solutions to problematic issues we identified and perceived. We sincerely hope this will bear fruit in terms of the future MRC functioning and the execution of its mandate.

It must be understood that this review is not comprehensive as the time available was limited and the scope of MRC activities is large. The focus was on high-level questions, and so we were not able to reflect on the research quality, output and impact of individual MRC intramural and extramural units. Nor were we in a position to comment on the quality and functioning of the MRC's support services. We have made recommendations on the processes of unit review, which is essential for ensuring value for money in research. We have also recommended that the MRC engage in on-going processes of review, evaluation and revision of the functioning of the support services to ensure that their work is optimised.

This review has come at a critical time for the organisation. The organisation has completed the two-year long revitalisation process led by Prof. Salim Abdool-Karim, which resulted in very significant changes. It is early in the term of President Glenda Gray and the 2014-appointed MRC Board, and it is also before amendments to the MRC Act are submitted to Parliament. We suggest that our recommendations shape the course of the MRC over the coming five years and strengthen its role as a steward of medical research in the country over the coming period.

Our major recommendations are for the completion of the revitalisation process and strengthening of governance through revision of the MRC Act to clarify the division of responsibilities between the Board and the Executive. We recommend that the MRC move to occupy the leadership role of champion and steward of health science in South Africa, and as part of this, convene stakeholders to plan emerging research agendas to advance knowledge to strategically assist in decisions of the National Department of Health. We recommend that the MRC enhance its focus on promoting high-quality health sciences research whilst broadening its recognition of the impact of its funded work and promoting a much wider understanding of the benefits from investment in health research.

We also recommend that the MRC develop its thinking regarding how best to secure value for money for its health research investment and generate the information needed to guide evidence-based decision-making. Much greater South African control over the local research agenda can be

enabled by the MRC, strategically freeing resources to support more flagship projects and larger self-initiated research grants. Major long-term research investment in units should be based on supporting research excellence in defined priority areas. We have also motivated recommendations for establishing a learned Scientific Advisory Committee to support the President and strengthen advice on unit performance management and funding decisions.

The panel constituted four independent members (myself, Dr Harvey Fineberg, former President of the Institute of Medicine of the USA; Dr Ian Viney from the UK MRC; and Dr Jimmy Whitworth from the Wellcome Trust), and two representative units directors: Prof. Valerie Mizrahi from the extramural environment and Prof. Rachel Jewkes (also former acting-Vice President of the MRC) from the intramural environment.

We wish to thank Prof. Glenda Gray, and Dr Niresh Bhagwandin and their staff for the able organisation of the review and assistance at all times. Dr Alpa Somaiya who assisted with note-taking during our interviews and in the production of the report is warmly thanked for her services.

Finally, I must thank my fellow panellists for their hard work and persistent commitment.

Hoosen (Jerry) Coovadia

REVIEW PANEL CHAIRPERSON
February 2015

TABLE OF CONTENTS

EXECUTIVE SUMMARY	4
CHAPTER 1.....	13
INTRODUCTION AND BRIEF OF THE REVIEW	13
CHAPTER 2.....	16
REVITALISATION AND THE POSITION OF THE MRC WITH RESPECT TO SOUTH AFRICAN HEALTH RESEARCH.....	16
PERCEPTIONS OF THE REVITALISATION PROCESS	16
THE ROLE OF THE MRC WITH RESPECT TO HEALTH RESEARCH IN SOUTH AFRICA	17
CHAPTER 3.....	20
GOVERNANCE.....	20
SCIENTIFIC ADVISORY COMMITTEE	22
CHAPTER 4.....	23
MRC'S IMPACT AND ITS MEASUREMENT AND ASSESSMENT OF VALUE FOR MONEY	23
CAPTURING A MULTIPLICITY OF IMPACT.....	25
USE OF IMPACT FACTORS	26
VALUE FOR MONEY IN THE HEALTH RESEARCH PORTFOLIO SPEND	28
CHAPTER 5.....	30
FUNDING PRIORITISATION AND ALLOCATION, FUNDING STREAMS AND PERFORMANCE MANAGEMENT	30
FUNDING PRIORITISATION AND ALLOCATION.....	30
FUNDING STREAMS.....	32
INTRAMURAL AND EXTRAMURAL UNITS.....	32
OTHER FUNDING MECHANISMS	35
CHAPTER 6.....	39
THE SOUTH AFRICAN MRC OVER THE NEXT 5 YEARS	39
Annexure A.....	41
The review programme.....	41
Annexure B.....	46
Bios of panel members.....	46
Annexure C.....	50
EXTRACT FROM THE MRC ACT, No. 58, 1991	50
ACRONYNS AND ABBREVIATIONS.....	52

EXECUTIVE SUMMARY

The South African MRC is a relatively small organisation with a small budget within the overall context of both local and global health research funding, yet its standing and influence both nationally and internationally are disproportionate to this. It is a highly respected organisation and has been successful in leveraging additional resources from a range of mostly international donors. The organisation is clearly a national asset and our aim as a review panel was to deepen our understanding of the MRC, its strengths and challenges, and its position within the overall health science system in South Africa, as well as make recommendations for strengthening this role.

Revitalisation and the position of the MRC with respect to South African health research

The panel found overwhelming support for the revitalisation process, but also evidence that it was still unfinished. Some of the recommendations of the Revitalisation (Green) Report have not yet been implemented and it is important that some of the hard-won improvements are not reversed. Staff morale is lower than it should be and many of the staff interviewed expressed frustration with the inefficiencies in the administrative systems and processes within the organisation (e.g. the lengthy time to conclude contracts). The review panel is of the opinion that the overwhelming priority for the MRC is to facilitate science, that it is a science-led organisation, and that administrative processes and functions need to be reviewed to make sure that they can support the best science. Further, the panel is concerned about the large fraction of the budget spent on administration, and perceives that peer review, grant management and the grant assurance activities of the MRC could be made more cost-effective and useful. Communication within the MRC and with external stakeholders is at a low level and not supported or given the priority that it merits. The panel recommends that this is addressed as a matter of priority.

The panel was asked to investigate the MRC's role as a 'custodian of health research', but the panel formed the opinion that the MRC has a critical leadership role in health research as a champion and through stewardship (connoting responsible guidance). The MRC's role as a health research champion is most importantly potentially manifest in using its influence to advocate for a larger research science spend from the National Treasury and in leveraging external funding for health research in the country, particularly through the new innovation entity Strategic Health Innovation Partnerships (SHIP). The MRC also has a critical 'convening' role to play in the area of health research by virtue of the credibility, authority and mandate it has in this regard. A health research agenda must be developed for the country by all of the key stakeholders, and the MRC is well positioned to convene meetings to enable this process. A common theme emerging from the interviews was the fragmented state of the health (and medical) research sector in South Africa. The MRC has an important potential role in convening meetings across science councils in order to elucidate their investment in health research and training; and to ensure that gaps, duplication and competition between science councils are identified and where possible, prevented.

RECOMMENDATIONS

1. The MRC President should complete the revitalisation process.
2. Support services should be reviewed to ensure that they can efficiently and effectively support science .

3. There is a need to improve staff morale and tackle issues that are adversely affecting morale.
4. The MRC needs to develop and implement an internal and external communication plan.
5. The MRC's role in health research in South Africa should be articulated and operationalised in terms of being a champion and steward, rather than a custodian.
6. The MRC should use its convening and coordinating power to begin a dialogue to address the fragmentation within the health (and medical) research system. The dialogue should occur at multiple levels:
 - a. Between the intramural and extramural communities (e.g. through the creation of an MRC forum comprising intramural and extramural unit directors, as proposed in the 2010 SETI Review and currently under consideration)
 - b. Between the MRC and other science councils, through meetings with the senior leadership of the science councils, as well as the DoH, DST and DoHET
 - c. To use the MRC's influence to convene multi-stakeholder groups to discuss and set agendas for research on key areas, e.g. NHI
7. The MRC should lead a process to take stock of health research and scholarship funding across science councils and related national bodies to better understand gaps and identify opportunities for savings from synergies.

Governance

The MRC Act stipulates that the MRC President should be a registered medical practitioner. The review panel widely canvassed views on the merits of this, and most of those asked supported it. The panel believes that the president of the MRC should be an individual with outstanding scientific credentials, as well as having excellent leadership and managerial skills. While a non-clinician may certainly have these qualities, a medical practitioner with the same scientific and leadership abilities would be more likely to appreciate the full spectrum of basic and applied research needs, spanning from bench to bedside and from the field to the clinic, to command the respect of health leaders. This would also lend added credibility and knowledge in relating a research agenda to health needs. For these reasons, the panel favours continuing the practice of appointing a qualified medical professional as the President of the MRC. However, the panel felt that the MRC President should not have to be based in Cape Town, the requirement of which may be an impediment to recruitment of future MRC presidents.

The review panel did not investigate the workings of the MRC Board in any detail, but it did reflect on the working of the Board in the context of the MRC Act. The panel welcomes the distinction between the Board's role in strategic affairs and the Executive's responsibilities for the operational management of the MRC, as set out in the Act and clarified by the resolution adopted at a special meeting on 7 September 2012. This distinction is essential for good governance and the panel recommends further clarification of roles by incorporating this distinction in amendments to the MRC Act.

The panel supports the proposed establishment of an MRC Forum, including intramural and extramural unit directors, and other MRC researchers, to debate research-related challenges and issues. The panel considered the 2010 SETI review recommendation that there be a shift from the government department to which the MRC is principally accountable (the DoH) to the DST, but perceives the reporting line to the DoH as more appropriate given the MRC's mandate to improve the health of the nation through research. We recommend the President and Board make efforts to strengthen the relationship with the DoH, while maintaining and further strengthening the relationship with DST.

There is a widespread view that greater scientific input is required to support the President. Three functions need to be performed: providing ad hoc scientific advice; oversight of the outputs from MRC units and other fund recipients, and providing advice on major funding decisions, including those related to establishing, continuing and closing units; and providing scientific advice on the direction of the MRC overall, taking into account the most important developments in health science globally and emerging ideas on understanding performance and impact within health research that can be adapted to the needs of the South African MRC. We recommend that an independent Scientific Advisory Committee be constituted for the MRC by the President to conduct these three functions. Members should be eminent national and international research leaders appointed by the President for a term of not more than 5 years.

RECOMMENDATIONS

8. The MRC President should be a distinguished researcher with a strong record of leading and managing institutions. The Board should revisit the requirement that the President reside in Cape Town. The panel favours continuing the practice of appointing a qualified medical practitioner as the President of the MRC.
9. The MRC Act should clarify the responsibilities of the Board and Executive. In keeping with its current resolution, the Board should be aligned to focus on high-level strategic matters and constituted appropriately for this function. They should also report to, and receive feedback from, the line Ministry.
10. The President and Board should seek to strengthen the relationship and support from the DOH.
11. A scientific advisory committee should be established by the President to provide scientific advice and direction to help implement and advance the research programme of the MRC.

MRC's impact, and its measurement and assessment of value for money

Widespread support was expressed for the new strategic direction of the MRC and the clarity that has been provided through articulating a vision that has at its centre the conduct of high-quality science. However, the MRC only collects information on the limited set of indicators that are included in the Annual Report, the validity of which are confirmed by the auditors. These indicators

were criticised for not being helpful in understanding what the MRC does and how well it does it (e.g. the number of projects funded by SHIP, rather than the types of products and interventions that are being developed and the stage they are at). They fuel a perception that the MRC does not value many of the activities which occupy a substantial amount of researchers' time, and in many cases, were very highly valued by the South African Government. The MRC should develop products to enable meaningful reporting to peers and the public regarding the work of the organisation (i.e. what MRC research delivers). This should be part of the extended framework of outputs and outcomes. We recommend that the MRC publish an annual review that reports on research achievements and productivity much more broadly than the indicators of the Annual Report. An annual review should emphasise innovation, present case studies of policy impact (which may summarise work and impact over multiple years), report on students graduated, and contributions to the science system nationally and internationally. The choice of measures is likely to be a useful signal to the MRC community about what the MRC values, and it would strengthen the communication of MRC achievements, thus supporting the case for maintaining and increasing MRC funding.

The panel recognises the limitations of impact factors in assessing the quality of research outputs and keenly debated whether alternative measures could be recommended. It believes that it is essential that there is an assessment of quality in output reporting and that MRC does not just count outputs. The impact factor measure, which predicts the likely scientific weight of a paper based on average journal citations, is crude and has considerable and well documented limitations, but it the panel concluded that there is no alternative short-term measure of the likely importance of a paper.

Like many major global funders, the MRC feels that it is essential to understand the distribution of its investment in research to demonstrate the impact of this and ultimately show that it gets value for money from its research spend. Understanding this is complex and requires a great deal of information on financial inputs into the research system, and outputs of all the main types. It also requires a system of valuing outputs, without simplifying them to a rand value, so that an assessment of benefit per unit input can be made. An understanding of value for money in the MRC's research portfolio should be approached, which will enable decisions to be made regarding whether support for some areas needs strengthening, or any potential impact of scaling back support in others.

RECOMMENDATIONS

12. The MRC should produce an annual review, in addition to its Annual Report, to highlight the major scientific advances, case studies of impact on policy and practice, and information about other achievements of the previous year.

13. The current approach to measuring the quality of MRC research should continue, but be built upon with an extended framework of outputs and outcomes. This should include reporting on leveraged funding.

14. The MRC should commission research by social scientists and economists to better understand the link between research funding and impact in the South African context, and to apply the best science of science policy research provided from studies around the world.
15. The MRC should consider formally examining the question of value for money across the organisation's funding portfolio.

Funding distribution, funding streams and performance management

Past distribution of MRC funding has not been explicit. One of the changes implemented by the revitalisation was to redirect MRC funds to national priorities, in particular to focus the intramural units on the leading causes of mortality (whether measured by years of life lost or number of deaths). However, this approach has been criticised for neglecting some leading causes of morbidity and mortality. The panel heard concerns that the new focus was too narrow and would not allow for funding system-orientated research or cross-cutting issues, and that there was bias towards basic science and public health research, although examination of what is being funded does not support these criticisms. However, the MRC needs to understand its funding portfolio better, and we recommend that it analyses this using standard definitions so it is able to track the distribution of its spend.

The distribution of funding among the universities is uneven. This largely reflects differences in the extent to which universities themselves prioritise research and research excellence. To further national goals of capacity building, the MRC should work in partnership with universities, according to need, to assist them to identify and overcome institutional impediments to the growth of research, and enable access to projects of world-class scientific endeavour (through direct funding or collaboration) within which capacity can be developed. The MRC should also clearly state its priorities for supporting research.

The MRC has established a model of allocating resources: 40% for intramural research, 40% for extramural research and 20% for administration. The MRC has six funding streams: the units (intramural and extramural), PhD scholarships, early career awards, self-initiated research grants (SIRs), flagship projects and the SHIP innovation funds. In discussions with interviewees, it was difficult to discern a clear distinction between the intramural and extramural units with respect to their value to the MRC and nation.

Extramural unit funding is limited compared to that for intramural units, and current extramural units leverage between 2 and 20 times the funding contribution they receive from the MRC, which seems good, but has resulted in several extramural having very small budgets. The position of extramural units within universities enables them to capitalise on the human and institutional resources of a larger research community in the university, and subsequently, a lower investment per research unit is required by the MRC. The panel suggests that the MRC consider how it could best make use of its brand to maximise influence extramurally, and as part of this, revisit the question of what research should be supported intramurally versus extramurally. Explicit criteria for intramural unit support should be developed, and the sole criterion extramurally should be to support centres of research excellence on health priorities.

Even though MRC funds for extramural units are limited annually, they amount to a considerable investment over 15 years, and so it is essential that the performance of extramural units is actively managed by the MRC. Extramural units are intended to have a lifetime of 15 years but until recently, the policy was implemented inconsistently. The review panel learnt that extramural unit directors were very unclear about what the MRC expected of them. In contrast, intramural unit directors have annual cycles of performance assessment and management. We suggest that all units should undergo active performance management by the MRC and this should include a common core of measures that is applied to all units and a variable measure based on agreed objectives that relate to a specific unit's environment. This will enable more rigorous engagement with units at their 5-yearly review, and provide the context for which it would be fair to implement a policy under which renewal of a unit for a further term would not be automatic.

The panel advises that all units have properly constituted 5-yearly review panels with reviews conducted rigorously when funding decisions are to be taken. Unit review panel members should all be eminent researchers. We suggest that all units (intramural and extramural) should be asked at reviews to present their strategic vision and projected outputs for the coming 5 years. These should be tailored to the context in which the units operate, and the units should be held accountable for achieving these.

To overcome recent difficulties encountered over processes to establish new extramural units, with lack of clarity regarding MRC priorities, the panel suggests that there could be a two-stage process whereby expressions of interest are freely invited and shortlisted by the Scientific Advisory Committee, which will make the final recommendations on units. Those shortlisted should be invited to submit full applications with national and international peer review. In view of the very substantial investment in research units, the panel believes that funding should in the first instance be allocated on the basis of research excellence in priority areas, and other considerations should be secondary to this.

The majority of MRC scholarship funding is currently provided to clinician PhDs and this is strongly supported by stakeholders who perceive that these scholarships are appropriately directed to meeting the country's need of training more clinicians in research. The panel supports the fairness of the current process of scholarship decision-making, which is by a panel that has reviewed all applications, and recommends steps to improve efficiency in funding.

Career awards are very strongly appreciated and the panel frequently heard the request for there to be more of these given each year. Supporting early career scientists provides very good value in that they are committed to their research careers, and the cost is lower than supporting more senior scientists.

The SIRs support emerging researchers, post-PhD, and play an important role in this regard despite their small size. The panel heard that when used to leverage funds, SIRs can be highly valuable platforms for undertaking research and publishing, and training masters and PhD students. The panel recommends increasing the maximum value of SIRs, improving output reporting and using subject-specific review panels to alleviate the administrative burden of organising external peer review.

The MRC's funding portfolio supports the development of scientists through training and early career support (including through SIRs), and platforms from which the units can leverage funds for projects. The flagship mechanism is the only one that provides funding for investigating major scientific questions. Internationally, science councils seek to balance these functions, often separating research and training grants, so that funding is provided to support the pursuit of important scientific questions through flagship-type mechanisms. If this is not done, South African control of the research agenda is restricted, the best learning environments for young researchers are constrained, and research is mostly limited to areas in which international funds are easier to secure. The panel heard that high-priority research areas, including non-communicable disease research, burden of disease and mental health research, are not easy to fund through international sources and thus are relatively underfunded in South African research. We recommend that that MRC reconfigure its portfolio to make more funds available for important projects that are fully funded by the MRC.

The panel endorses the importance of transforming the South African science system and of distributional justice. It supports the continued prioritisation of candidates from historically disadvantaged backgrounds for PhD scholarships, early career awards and SIRs. However, it also notes that centres of health research excellence in historically disadvantaged institutions (HDIs) are unusual. The panel endorses the MRC's goal to seek to build these, and suggests that the MRC considers a resource allocation strategy that assigns a defined pool of funding to HDIs to help build their staff's scientific capacities and facilities, and strengthen their grantsmanship.

RECOMMENDATIONS

16. We recommend that the MRC analyses its funding portfolio using standard definitions, so it can track the distribution of its spend by type of research and health priority.
17. We suggest that the MRC offers to work in partnership with universities to assist them identify and overcome institutional impediments to the growth of research, and enable access to projects of world-class scientific endeavour (through direct funding or collaboration) within which capacity can be developed.
18. We recommend that the MRC makes its priorities for supporting research explicit to enable transparency in funding decisions, and encourage the health research community to develop interests and capacity in priority areas.
19. The MRC should review the criteria for distinction between intramural and extramural units, and ensure these are clear and disseminated. These should be considered over time when making decisions about migration of intramural units out of the MRC.
20. The MRC should apply its rule of supporting extramural units for a maximum of 15 years consistently.
21. The MRC should develop performance criteria for extramural units and apply these, as well as provide feedback annually, as is done for intramural units.

22. We recommend that a distinction be made between unit performance assessment and management, and reporting on the productivity and quality of work of the MRC overall. Performance assessment should follow a layered approach with core indicators that apply to all units, together with additional performance measures specific to particular research environments.
23. The MRC should hold all units accountable for working towards an agreed strategic vision and projected 5-yearly outputs.
24. We recommend ceasing efforts to establish scientific advisory boards for intramural units and a return to 5-yearly reviews by appropriately constituted and prepared panels.
25. We recommend the use of a two-stage process for unit applications, with shortlisting of expressions of interest by the Scientific Advisory Committee, which will make the final funding recommendations after formal peer review. Universities should not be gatekeepers in the process.
26. We recommend that the primary consideration in decisions regarding funding new extramural units should be to support research excellence in priority areas.
27. The panel recommends that that the MRC reconfigure its portfolio to make more funds available for important projects that are fully funded by the MRC through substantially increasing the limits on SIRs (we suggest to R2 million over 3 years) and providing a funding mechanism through which the flagship projects of excellence can be funded each year based on a competitive application process. It must be stated that this funding is only for new collaborative, interdisciplinary research projects.
28. The MRC should develop a funding stream (a ring-fenced pot) aimed explicitly at developing centres of excellence at HDIs.
29. The panel suggests that being currently registered should be made an explicit requirement for PhD funding as it provides some assurance of student commitment, the quality of the project and university support for the research.
30. We suggest reducing the administrative burden related to small SIR application reviews by using subject-specific review panels, with a balance of internal and external scientific members, and reserving formal external peer review for large grants.
31. The MRC should consider increasing the number of larger awards in order to maximise its impact and to ensure greater value for money.
32. We recommend that a system is developed to encourage completeness of reporting of outputs of research, including those after the close of the project, and that this should be incentivised

through a process whereby previous outputs are explicitly considered in deciding about future awards.

REPORT

CHAPTER 1

INTRODUCTION AND BRIEF OF THE REVIEW

In 2010, a SETI review of the South African MRC, which was an external review commissioned by the National DoH and DST, perceived the organisation to be a necessary and valuable national asset, yet one which had encountered a range of difficulties that detracted from its ability to maximise its potential contribution. The organisation required strengthening of its governance, a more consultative internal environment, increased baseline funding from Government, a re-balancing of the resource allocation model, sharpening of the MRC's mandate, improvement in the information conveyed in output and outcome indicators, and revitalisation of clinical research for health and innovation.

In response to this report, the Minister of Health, Dr Aaron Motsoaledi, appointed a new MRC Board and requested Prof. Salim Abdool-Karim to serve as an interim President to undertake a programme of revitalisation of the MRC. In the first months of his post, Prof. Abdool-Karim conducted his own review of the problems facing the MRC and developed a strategy for revitalisation, which was adopted by the MRC Board. Prof. Abdool-Karim identified nine domains in which to act to improve the MRC. These were to:

- **prioritise and focus the intramural research**
- **revamp extramural research support**
- optimise the support and administration structure and functions
- optimise space and facilities
- **establish a new innovation entity**
- enhance the library and information systems
- improve governance and funding
- improve human resource management
- improve information flow and communication.

Three of these domains (in bold above) are centrally related to the MRC's research activities, rather than support for research. In the intramural environment, the tasks included creating a new ethos of high-quality science and health impact, reducing the number of intramural units to those focused on the top 10 causes of death, creating a new peer-review mechanism for intramural units, and increasing research funding available to intramural units. In the extramural environment, there was similarly a need to increase funding available for extramural research, and also to provide clarity on the MRC's expectations of extramural units and improve the MRC's relationship with the universities. The new innovation entity created is called Strategic Health Innovation Partnerships (SHIP) and a key task was to secure substantial funding for SHIP.

This review was conducted two-and-a-half years after Prof. Abdool-Karim came to the MRC to commence the task of revitalisation. The timing enabled the review panel to consider the extent to

which the task had been accomplished, and to identify and make recommendations about areas in which the revitalisation process was unfinished.

The terms of reference for the review were prepared by Prof, Glenda Gray, and they required the review panel to investigate and apply its mind to the following questions, predominantly drawing from information collected through interviews with key stakeholders, and derive a coherent collective view.

TERMS OF REFERENCE

1. Is the MRC fulfilling its mandate as outlined in the MRC Act to conduct medical research aimed at improving the health of the nation?
2. Is the MRC fulfilling its role as custodian of all health research in South Africa?
3. Are the MRC's priorities appropriate? Are the processes for determining these priorities appropriate?
4. How is the MRC performing compared to similar organisations in other countries?
5. Is the MRC contributing appropriately to South Africa's science and technology goals?
6. Are there any recommendations to assist the MRC to improve?

The full programme of the review and its interviews is provided in Annexure A. It was unfortunately not possible to conduct site visits due to the limited time, but all interviews were conducted either in person or through telephone- or video-conferencing. In total, 44 interviews were conducted over four days. Most of the interviews had been arranged in advance, but some were included at short notice in response to Panel requests to interview some additional stakeholder groups, including self-initiated research grant holders, newly announced extramural unit directors, and Thabi Matlin, Clive Glass and Nireesh Bhagwandin from the MRC's grants and scholarships offices. Interviews were held with the MRC President and Executive Management Committee, intramural and extramural unit directors, self-initiated research grant recipients, deans and deputy-deans of faculties of health sciences, Glaudina Loots from the DST, Prof. Salim Abdool-Karim, Prof. Lucille Blumberg from the NHLS/NICD and staff managing extramural funding from the MRC.

The review process included a limited component of document review comprising:

- MRC Strategic Plan 2014
- MRC Annual Report 2014
- Revitalising the MRC 30 July 2012
- Report of the SETI review 2010
- The MRC Act, 1991.

The review panel took stock of its 'terms of reference', and decided to rearrange them to enable a coherent report. The rearranging was in part driven by a perception of a natural grouping of, or overlap between, some of the questions, but also stemmed from the Panel's perceptions as the review progressed that some of the very important issues that emerged from the interviews deserved more emphasis than would have been accorded if they had been contained within a section on 'any other recommendations'. Thus, the final report is presented in chapters, which cover the position of the MRC in the national science system and values of the organisation, governance, MRC goals, impact and its measurement, and assessment of value for money and funding (intramural and extramural units, scholarships and early career awards and self-initiated research

funding). The final chapter draws conclusions and makes recommendations for the way forward over the next 5 years.

The Panel members' biographic details are presented in Annexure B. The members were:

- Prof. Hoosen (Jerry) Coovadia, (chairperson) Director, Maternal Adolescent and Child Health School of Public Health, University of the Witwatersrand; and Emeritus Professor of Paediatrics and Child Health, University of KwaZulu-Natal; and Commissioner, National Planning Commission, Presidency, Republic of South Africa
- Dr Harvey Fineberg, former President, Institute of Medicine of the USA
- Dr Ian Viney, Director, Strategic Evaluation and Impact, UK MRC
- Dr Jimmy Whitworth, Head of Population Health, Wellcome Trust
- Prof. Valerie Mizrahi, Director, Institute of Infectious Disease and Molecular Medicine and the MRC/NHLS/UCT Molecular Mycobacteriology Research Unit, University of Cape Town
- Prof. Rachel Jewkes, Director, Gender and Health Research Unit and former acting Vice-President, South African MRC

Dr Alpa Somaiya assisted the panel with note-taking during the interviews and production of the report.

CHAPTER 2

REVITALISATION AND THE POSITION OF THE MRC WITH RESPECT TO SOUTH AFRICAN HEALTH RESEARCH

PERCEPTIONS OF THE REVITALISATION PROCESS

The panel found unanimous support for the MRC revitalisation process in spite of the profound impact of the closure of intramural units with associated staff retrenchments, and closure of a number of long-standing extramural units. This support is unprecedented given the scale of the change programme. The process was seen by many as being long overdue. Moreover, the notion of positioning scientific excellence at the forefront of the revitalisation strategy has met with resounding support from both the intramural and extramural communities. This notion, together with a broad understanding and acceptance of the need for the MRC to focus research efforts on national health priorities with the primary purpose of impacting on health, has resulted in a common vision and sense of purpose. Since the revitalisation, there is a sense of pride in being associated with the MRC, coupled with an improvement in the reputation and brand of the organisation.

There was unprecedented support from unit directors for the change programme. However, it was recognised that there are recommendations still outstanding from the Green Revitalisation Report that need to be addressed and tasks ahead to ensure that some of the difficult changes that were made are not reversed. Although some of those interviewed requested a period of consolidation, the panel was of a view that the revitalisation process should first be completed.

Despite an overall sense of support from intramural and extramural unit directors for the revitalisation process, the panel perceived a need to attend to matters influencing staff morale in the intramural environment at this time of great change and concomitant anxiety. A number of issues were identified that would contribute to strengthening morale in the organisation. Within the intramural environment, unit directors described having a sense of administrative overload. Many expressed frustration with the inefficiencies in, and the cumbersome nature of, the administrative systems and processes within the organisation (e.g. the lengthy time to complete contracts). The review panel is of the opinion that the overwhelming priority for the MRC is to facilitate science and that it is a science-led organisation. Administrative processes and functions need to be reviewed to make sure that they support science. We suggest that the President and leadership consider mechanisms to more fully engage support staff in the planning of the organisation's scientific work in order to instil a better understanding of the mission and scientific objectives of the organisation as a whole.

There was also some concern regarding the lack of institutional memory within the senior leadership team of the MRC. It is very important that the recently appointed senior managers, especially the new Vice-Presidents, familiarise themselves with the inner workings of the MRC. The panel also heard that decisions made regarding space on the MRC campuses – its assignment, configuration and utilisation – have also become an issue of contention within the intramural environment. The panel cautions that space issues should be negotiated sensitively to avoid negatively impacting organisational anxiety levels and morale.

The revitalisation process has resulted in a substantial increase in resource allocation to science and a reduction in the budget percentage for administration. However, the panel perceived that as a proportion, the 20% of the MRC budget allocated to administrative costs is still very high for an efficiently run organisation. As discussed below, the panel perceives that peer review, grant management and grant assurance activities of the MRC are conducted in a relatively inefficient and ineffective manner, and suggests that these activities could be made more cost efficient and useful.

Communication was perceived to be a priority for the revitalisation process, but the panel repeatedly heard that that communication from the MRC is generally lacking. Extramural unit directors are unsure of the policies and strategies of the MRC, they do not know if their activities are thought to be on track, and they do not know what other MRC-supported scientists are doing. There also does not appear to be much communication beyond their units, which could be useful for promoting the activities of the MRC and for general engagement with other research funding agencies. Internal and external communication of the MRC is at a low level and is not supported or given the priority that it merits. The panel recommends that this is addressed as a matter of priority.

Overall, the panel found the revitalisation process has reversed the decline of the MRC that had resulted from under-funding of research and leadership deficiencies, and has put the organisation on a steep growth trajectory, which is underpinned by the principles articulated in the revitalisation strategy. This has created a common sense of purpose within the community; the overall mood is optimistic and there is a sense of anticipation and expectation. However, significant challenges remain: staff morale is not as high as it should be and the revitalisation process is not complete.

RECOMMENDATIONS

1. The MRC President should complete the revitalisation process.
2. Support services should be reviewed to ensure that they efficiently and effectively support science.
3. There is a need to improve staff morale and tackle issues that are adversely affecting morale.
4. The MRC needs to develop and implement an internal and external communication plan.

THE ROLE OF THE MRC WITH RESPECT TO HEALTH RESEARCH IN SOUTH AFRICA

The panel was asked to investigate the MRC's role as a 'custodian of health research' and took as its starting point the question of whether this was an appropriate aspiration for the organisation. It found substantial unease with the concept of the MRC serving as custodian of all health research in South Africa, particularly among interviewees from the extramural environment. The chief concern was that this notion accorded the MRC a prime position controlling health research, which would negatively impact the autonomy and/or independence of other stakeholders. The discussion clearly also reflected a lack of common understanding of the term 'custodian', in this context. The MRC has a leadership role to play in this regard, through stewardship (connoting responsible guidance) as opposed to custodianship (connoting protective control) of health research in the country.

The panel perceived that that one of the most important roles of the MRC was that of champion of health research in South Africa. In this role the MRC should use its influence to advocate for a larger research science allocation from the National Treasury and to leverage external funding for health research in the country, particularly through the new innovation entity SHIP. Those interviewed generally reflected little on the role of the MRC as a champion for health research. The panel perceived this to be a substantial omission from the discussions.

There was unanimous support for the notion that the MRC has a critical 'convening' role to play in the area of health research, by virtue of the credibility, authority and mandate it has in this regard. The growing stature, influence and brand of the MRC in the post-revitalisation phase have reinforced this power. A health research agenda must be developed for the country by all of the key stakeholders. Several of those interviewed suggested that the MRC could make a valuable contribution by drawing together researchers from different institutions, and other stakeholders, to set an agenda for research in an area that they would then pursue. An example given was research related to National Health Insurance (NHI). The panel agreed that a national dialogue on the key questions that need to be addressed in health research would be valuable and should include all stakeholders.

A common theme emerging from the interviews, and which was also raised in the 2010 SETI Review Report, was the fragmented state of the health (and medical) research sector in South Africa, which has resulted in multiple science councils, including the NRF, CSIR, HSRC, ARC and WRC, working in and funding health research. The MRC does not appear to have a close relationship with other research funding agencies. Indeed, we found it difficult to establish whether there is a specific scientific territory in health research for the MRC separate from other funding agencies. This has resulted in the perception of an uncoordinated health research sector in which there is possibly duplication of effort in some areas and major gaps in others, with very little coordination and communication across institutions involved in health research and innovation. The MRC has an important potential role in convening meetings across science councils to elucidate their investment in health research, including health science scholarships, to ensure that gaps, duplication and competition between science councils are identified, and where possible, prevented.

The panel perceived that the convening role of the MRC could enable dialogue at multiple levels. These would be among researchers and stakeholders on particular issues of national importance; between the MRC, other science councils, the National DoH and the DST; and between the intramural and extramural communities. The latter could be through discussions at an MRC forum comprising intramural and extramural unit directors, as proposed in the 2010 SETI Review and currently under consideration.

RECOMMENDATIONS

5. The MRC's role in health research in South Africa should be articulated and operationalised in terms of being a champion and steward, rather than a custodian.
6. The MRC should use its convening and coordinating power to begin a dialogue to address the fragmentation within the health (and medical) research system. The dialogue should occur at multiple levels:

- a. Between the intramural and extramural communities (e.g. through the creation of an MRC forum comprising intramural and extramural unit directors, as proposed in the 2010 SETI Review and currently under consideration)
 - b. Between the MRC and other science councils, through meetings with the senior leadership of the science councils, as well as the DoH, DST and DoHET
 - c. To use the MRC's influence to convene multi-stakeholder groups to discuss and set agendas for research on key areas, e.g. NHI
7. The MRC should lead a process to take stock of health research and scholarship funding across science councils and related national bodies to better understand gaps and identify opportunities for savings from synergies.

CHAPTER 3

GOVERNANCE

The MRC Act, 1991, defines the objects of the MRC to be ‘through research, development and technology transfer, to promote the improvement of the health and the quality of life of the population of the Republic and to perform such other functions as may be assigned to the MRC by or under this Act’. The Act sets out the functions, powers and duties of the MRC, which this report presents in Annexure C.

The Act stipulates that the MRC President shall be a registered medical practitioner. The review panel widely canvassed views on the merits of this, and most of those asked, including many who were not medical practitioners, supported it. The panel believes that the President of the MRC should be an individual with outstanding scientific credentials, as well as excellent leadership and managerial skills. While a non-clinician may certainly have these qualities, a medical practitioner with the same or similar scientific and leadership abilities would be more likely to appreciate the full spectrum of basic and applied research needs, spanning from bench to bedside, and from the field to the clinic. A physician would be more likely to command the respect of health leaders and would lend added credibility and knowledge in relating a research agenda to health needs. For these reasons, the panel favours continuing the practice of appointing a qualified medical professional as the President of the MRC.

The panel considered the requirement of whether the MRC President should be based in Cape Town. Whilst this is not stipulated in the Act, it has been a Board requirement and may be an impediment to recruiting future MRC Presidents. As the MRC has physical facilities in several locations, and especially in today’s world of telecommunications, the panel does not believe that the President should be required to reside in one designated city. Relaxing this requirement in the future, could open the position to a larger number of highly qualified candidates.

The MRC has a Board that is appointed by the Minister of Health, to which the President reports. The review panel did not investigate the workings of the MRC Board in any detail, but it appeared to be working well and providing stronger leadership than previously. However, some concerns were expressed about the degree of MRC Board involvement in operational matters. The panel reflected on the working of the Board in the context of the MRC Act. In terms of the MRC Act, the role of the Board generally is to manage and control the MRC, and specifically to *‘determine the policy and objectives of the MRC and exercise control generally over the performance of its functions, the exercise of its powers and the execution of its duties.’* The Board also appoints an Executive Management Committee, which is *‘responsible for the management of the affairs of the MRC in accordance with the objects and policy of the MRC’*. The Board further has clarified its intended relationship with the Executive Management in a resolution adopted at a Special Meeting of 7 September 2012, which states that *‘The Board is, in general, responsible for Strategic Direction and*

Oversight and the President is responsible for day-to-day management of the MRC. This is in keeping with the principles of good corporate governance, as described for example in the King III Report¹.

The panel recommends that in revisions to the MRC Act, the role of the Board should be more clearly expressed in terms of its focus on the strategic direction of the MRC, and operational matters should be explicitly delegated to the Executive of the Organisation, in keeping with both current Board policy and international standards of excellence in corporate governance. This recommendation was supported widely by those who discussed it with the panel. We recommend that the Executive assist the Board in providing strategic direction by providing papers for consideration, and discussing and presenting strategic questions to the Board for its deliberation. We consider it essential that in making appointments to the Board, the Minister considers the need for Board members to be experienced in research and well placed to guide the strategic direction of the MRC.

One of the recommendations in the 2010 SETI Review was the formation of an MRC senate-type body. This idea has since been developed into developing an MRC forum, with intramural and extramural unit directors, and other MRC researchers as members. The panel heard broad support for establishing such a body, which would meet periodically and debate research-related challenges and issues.

The MRC currently reports to the DoH unlike all other research agencies, which report to the DST. The 2010 SETI Review recommended that the department tasked with the administration of the MRC be shifted to the DST, but this has not been implemented. The panel considered whether this recommendation was still appropriate. It heard a wide variety of views on this, including a concern that the DoH focuses on service rather than research, and the likelihood that there may be a missed opportunity for greater synergy and understanding between the MRC and other research funding bodies, such as CSIR, HSRC and NRF. The counter view is that the MRC is rightly focused on medical research and has a predominance of public health research activities that reflect the quadruple burden of disease in the country, and the need to implement and evaluate interventions to improve the health of the nation. This gives a more natural alignment with the DoH rather than DST, which focuses solely on innovations in health. We observed that the current relationship with the DoH does not appear to be a close one. We noted that there was no engagement of the line department in this review. We recommend continuing the administration of the MRC through the DoH, but suggest that the President and Board make efforts to strengthen the relationship.

RECOMMENDATIONS

8. The MRC President should be a distinguished researcher with a strong record of leading and managing institutions. The Board should revisit the requirement that the President reside in Cape Town. The panel favours continuing the practice of appointing a qualified medical practitioner as the President of the MRC.
9. The MRC Act should clarify the responsibilities of the Board and Executive. In keeping with its current resolution, the Board should be aligned to focus on high-level strategic matters and

¹ King Code of Governance for South Africa 2009. Institute of Directors, southern Africa, Johannesburg.

constituted appropriately for this function. They should also report to, and receive feedback from, the line ministry.

10. The President and Board should seek to strengthen the relationship and support from the DoH.

SCIENTIFIC ADVISORY COMMITTEE

There is a widespread view that greater scientific input is required to support the President. Three functions need to be performed: the provision of ad hoc scientific advice; oversight of the outputs from MRC units and other fund recipients, and providing advice on major funding decisions, including those related to establishing, continuing and closing units; and providing scientific advice on the direction of the MRC overall, taking into account the most important developments in health science globally, and emerging ideas on understanding performance and impact within health research that can be adapted to the needs of the South African MRC. We recommend that an independent scientific advisory committee be constituted for the MRC by the President to provide these three functions. Members should be eminent national and international research leaders appointed by the President for a term of not more than 5 years.

RECOMMENDATIONS

11. A scientific advisory committee should be established by the President to provide scientific advice and direction to help implement and advance the research programme of the MRC

CHAPTER 4

MRC'S IMPACT, AND ITS MEASUREMENT AND ASSESSMENT OF VALUE FOR MONEY

The MRC is a relatively small organisation with a small budget, when compared to global research funding. Yet its standing and influence both nationally and internationally is disproportionate to this. The organisation is highly respected and has been incredibly successful in leveraging additional resources from a range of mostly international donors. The MRC supports high-quality research and training by funding specific research projects, providing flexible support for research and research infrastructure, and supporting scientists and support staff at all stages of their careers. The outputs from this (high-quality knowledge codified in papers, new skilled people, new lines of enquiry and development projects, and so on) will ultimately lead to wider impact on academia (e.g. via collaboration), society (e.g. via health gain) and the economy (e.g. via new products and processes).

This process of realising impact can be broken down into inputs (funding provided), intermediate indicators of progress (outputs and outcomes) and eventual impacts. The indicators can be arranged into the framework shown in Figure 1.

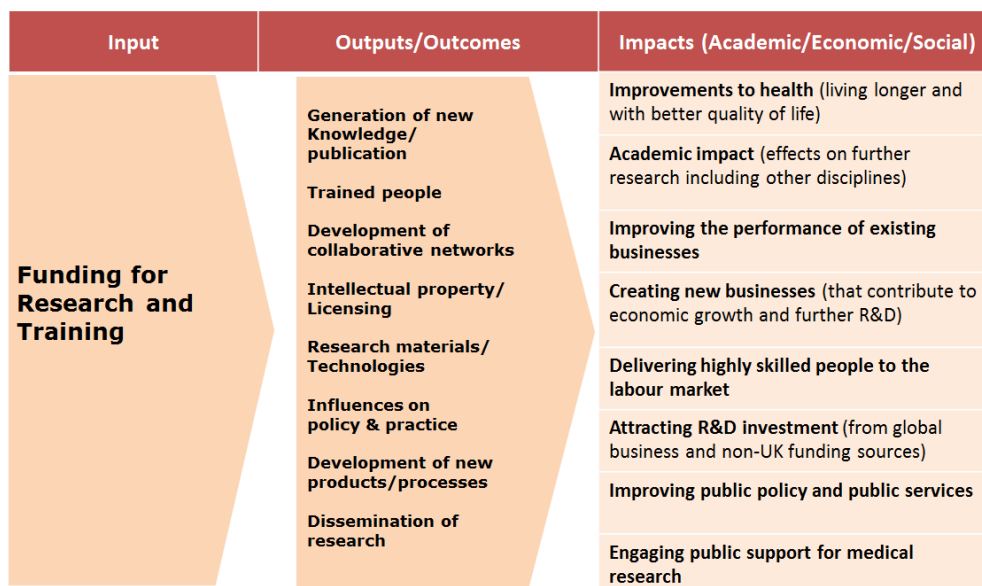


Figure 1: Input-output/outcomes framework (Source: Viney I, 2011)²

Despite the simplicity of the figure, the routes to impact are many and varied, with multiple cycles and feedback. It is also not always clear which routes yield the greatest return on investment. While routes to commercialisation (such as the protection and licensing of intellectual property) have often been considered as important for economic impact, the role that researchers may play in influencing the national and international policy environment could have the potential for far greater impact in

² Adapted from Viney (2011) slide presented at the UK University Health and Medical Librarians Group (UHMLG) spring forum <http://www.uhmlg.ac.uk/presentations/2011-spring-forum> (accessed April 2015)

a shorter time-frame. This provides argument for tracking a wide range of activities that researchers engage in, to pick up intermediate steps toward impact.

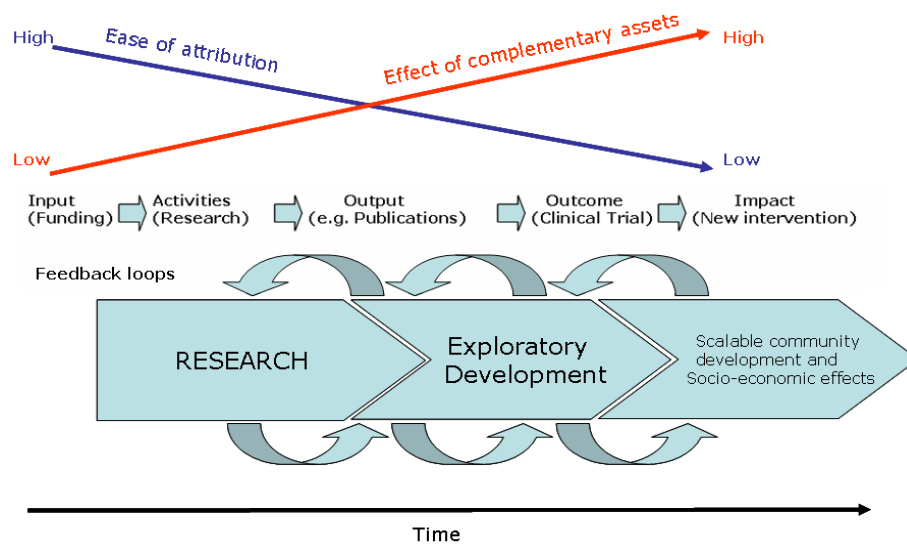


Figure 2: Challenges of attribution of research impact (Source: Hughes A, 2012)³

Figure 2 illustrates some of the fundamental challenges to link research funding inputs to eventual impact. It can take many years for research to make an impact on the economy and/or wider society, and due to the highly collaborative and inter-disciplinary nature of medical research, it can be difficult to determine whether all inputs are captured. The impacts from different types of research manifest over different timescales. Basic research generally takes longer to make an impact. Initially, new knowledge generated tends to have cycles of ‘academic’ impact, which later may spill over and find application across society/globally. Although the returns from basic research are very uncertain, in the long term they may be transformative and large, whereas more predictable returns from more applied research may be seen in the short term, but will be ultimately more narrow and modest.

The prospective collection of feedback from researchers to track translation requires a systematic approach over a long period of time, and feedback has to be sought throughout the lifetime of MRC funding and beyond. Care should be taken that indicators are specific and measurable, include an indication of quality, and discourage a sole focus on output numbers. Thought should also be given to minimising the administrative burden on researchers in reporting this information.

It is important to emphasise that more is not necessarily always better. Although more funding for front-line science is a good thing, collaboration is an example where the interactions that are most likely to yield the most innovative returns should be selected.

Although funding is an input into the system, it is also important to understand and report on the use of MRC funding to leverage additional support for research in the extramural and intramural environment.

³ Hughes, A. (2012) ‘University-Industry Links and Impacts Analysis’. A presentation at the MRC Economic Impact Workshop, London, 26th Oct 2011 reproduced in the MRC (2012) Measuring the link between research and economic impact: Report of an MRC Consultation and Workshop, Medical Research Council, Swindon.

CAPTURING A MULTIPLICITY OF IMPACT

Widespread support was expressed for the new strategic direction of the MRC and the clarity provided by articulating a vision that centres on conducting high-quality science and providing a clear indication of what achievements are indicative of research productivity. The MRC Revitalisation Report⁴ highlighted the need to produce knowledge in the form of high-impact peer-reviewed ISI journal publications and publications first authored by MRC-affiliated staff. This message has subsequently been put at the centre of the new MRC strategic plan⁵. The review panel was able to establish that organisation-wide, the MRC only collects information on the limited set of indicators that are included in the Annual Report, the validity of which are confirmed by the auditors. Intramurally, during individual level performance review meetings, reports are also made on an additional (overlapping) set of indicators that have been standardised by job grade across the organisation. The MRC currently gathers publication data quarterly from all its intramural and extramural units, and reports on these data annually⁶. The MRC's output indicators include the number of papers published in ISI journals that have an MRC-affiliated author or acknowledge MRC support, the number of papers published in the *Lancet*, *New England Medical Journal*, *Nature* and *Science*, and the number of papers where the MRC-affiliated author is listed first.

The review panel heard a range of concerns expressed about the indicators of research productivity. The National Treasury-reported targets/indicators for the MRC, which are the focus of the Annual Report, were criticised for not being helpful in understanding what the MRC does and how well it does it (e.g. the number of projects funded by SHIP, rather than the sorts of products and interventions that are being developed and the stage they are at). They fuel a perception that the MRC does not value many of the activities that occupy a substantial amount of researchers' time, and in many cases are very highly valued by the South African government. A disconnect was particularly visible in relation to reporting research impact. Since the MRC places a high priority on researching the 10 most common causes of mortality in South Africa, the panel would expect the organisation to value both the publication of quality papers and activities that strive towards improved policies and practices impacting on human health. At present, the MRC reports annually on the number of new local/international policies and guidelines that reference MRC research. However, this is just one very limited aspect of research uptake and impact. In fact, intramural directors described experiencing considerable pressure at times that stemmed from ad hoc requests for assistance or engagement from the DoH, often made at short notice, which increased their workload and work stress, but was not explicitly reported and apparently valued by the MRC.

The MRC needs to have a clear view on what it values most as a research organisation, and this essentially should be activities that further the goals of the MRC overall. The MRC should develop meaningful reporting products for peers and the public that present the work of the organisation (i.e. what MRC research delivers). This should be part of the extended framework of outputs and outcomes. The panel suggests that there is value in capturing more information about how MRC research findings are utilised, recognising also that often impact is accrued over some years as a body of work on a focused topic is developed, rather than stemming from one year's work or one publication.

⁴ <http://www.mrc.ac.za/RevitalisationReportGreen.pdf>

⁵ <http://www.mrc.ac.za/publications/MRCStrategicPlan.pdf>

⁶ For example, see <http://www.mrc.ac.za/publications/Annual2012-13.pdf>

Research staff also make a range of contributions to the national and international science system that form part of their 'scientific citizenship'. These include serving on journal editorial boards, reviewing articles and proposals for journals and funders, and assisting in NRF-rating reviews. They also include capacity development activities of teaching and supervising students for post-graduate degrees and mentoring. Many staff also organise scientific meetings and conferences. The panel recommends that the MRC encourage these activities among its intramural employees and present some of them as part of the annual reporting of the activities of the MRC.

The review panel recognises that basic scientific research has no direct link to policy and practice. However, it does not believe that the MRC should be restrained from reporting impact on policy and practice from other types of research for this reason, but should rather simply acknowledge that different types of funded research will produce different types of impact over different time scales.

The panel perceives that some of the anxiety expressed regarding the MRC's impact indicators was a product of the inevitable limitations of any set of measures that seek to indicate quality and productivity, rather than document all aspects of these. The concerns are aggravated by the fact that the MRC does not report on any other aspects of productivity of the organisation except the indicators in the Annual Report. The panel cautions that where possible, reporting should focus on outputs and outcomes, and not on merely monitoring activity. Nonetheless, we recommend that the MRC publish an annual review that reports on research achievements and productivity more broadly than the indicators of the Annual Report. An annual review should emphasise innovation, present case studies of policy impact (which may summarise work and impact over multiple years), report on students graduated, and contributions to the science system nationally and internationally. Although reporting for such a review can be onerous, there was strong support for the publication in order to celebrate the MRC's achievements in a wider range of output areas than those included in the Annual Report. The choice of measures should be a useful signal to the MRC community about the MRC values and would strengthen the communication of MRC achievements, thus supporting the case for maintaining and increasing MRC funding.

The MRC Board suggested that a broader annual evaluation framework could include metrics such as MRC employee satisfaction and that the opportunity could be taken to check how embedded the revitalisation programme had become across the organisation. However, the review panel felt that this could be undertaken internally and did not support its inclusion in an annual review.

USE OF IMPACT FACTORS

In determining the quality of scientific productivity, the MRC places strong emphasis on journal impact factor. Interviewees agreed that the publication of high-impact papers was a clear aspirational target that is accepted by the research community, but also considered that it was limited in what could be said about the quality of publication output. Some interviewees felt unfairly disadvantaged by the emphasis on impact factor. Internationally, impact factor is recognised as an indicator that has limitations (see panel). Where it is feasible to use them, article-level bibliometrics (e.g. citations) prove more information than the journal's impact factor⁷. However, citations accrue over time after publication and cannot be used to indicate quality in the short term (especially during the first year).

⁷ To see the San Francisco Declaration on Research Assessment (DORA) <http://www.ascb.org/dora-old/files/SFDeclarationFINAL.pdf>

The panel perceives that it is essential that there is an assessment of quality in output reporting and that the MRC does not just count outputs. This is particularly salient as it is possible to produce large numbers of publications that contribute little incrementally to generating important scientific knowledge. Whilst some fields find it easier than others to publish in high impact journals, these journals do publish all types of research from social epidemiology through to the highest quality basic science. A measure that predicts the likely scientific weight of a paper based on average journal citations is thus crude, but remains one that has not been surpassed as a short-term measure of the likely importance of a paper.

The following table provides an example of how output/outcomes can be diversified and metrics that could be used in performance assessment.

The main concerns recognised internationally about impact factors include the following:

- Journals with high impact factors may not be the most appropriate for all fields.
- The methodology for calculating impact factors is not transparent or openly accessible.
- The impact factor is an average calculated across different types of papers, including articles and reviews.
- Impact factors may be gamed by editorial policy (e.g. encouraging citation of the journal's previously published papers).
- Citations within journals are highly variable (all journals include articles with low and high impact).
- Citations vary significantly across scientific fields.

Evaluation framework area	Suggested measures	Evidence	Considerations for implementation
Generation of new knowledge	Bibliometric field weighted citations,	<ul style="list-style-type: none"> • Published output with MRC acknowledgement 	Impact factor (short term) H index (across career)
Trained people	Number of postdoctoral fellows, PhD and MSc students supervised	<ul style="list-style-type: none"> • Degree completion rates • Research career success of supervised students 	Definition of career 'success'
Development of collaborative networks	Number of evidenced collaborations	<ul style="list-style-type: none"> • Co-authorship, co-funding • exchange of expertise • access to facilities or research materials 	Collaborations across disciplines e.g. including basic scientists and clinicians
Leveraged income	External funding won as a result of MRC support	<ul style="list-style-type: none"> • (Co-) applicant on award that supports research 	May wish to capture 'in kind' contributions
Intellectual property	Proportion of licensed IP, income	<ul style="list-style-type: none"> • Granted patent families • Licenses agreed • Returning income 	Importance of patent also requires scrutiny
Research materials, technologies	Number adopted by academic and commercial partners	<ul style="list-style-type: none"> • Material transfer agreements • Software 	
Influences on policy		<ul style="list-style-type: none"> • Policy documentation • Use of research in policy documents or training interventions • Practice change due to research findings 	Reach and significance
Development of new products and processes	Description of new products	<ul style="list-style-type: none"> • Products categorised by developmental stage/ type • Clinical trial registration 	Products themselves may be an output of earlier research
Dissemination of research		<ul style="list-style-type: none"> • Participation in stakeholder meetings • Policy briefs • Media interviews • Webpages • Conference/seminar organisation 	Translation to non-academic audiences

RECOMMENDATIONS

12. The MRC should produce an annual review in addition to its Annual Report to highlight the major scientific advances, case studies of impact on policy and practice, and information about other achievements of the previous year.
13. The current approach to measuring the quality of MRC research should continue, but be built upon with an extended framework of outputs and outcomes. This should include reporting on leveraged funding.

VALUE FOR MONEY IN THE HEALTH RESEARCH PORTFOLIO SPEND

Many large global research funders are concerned with understanding the impact of their investment in research and this has resulted in an international body of research on science policy. In keeping with this, the MRC is concerned that it should be able to demonstrate that it gets value for money from its research spend. This is an important concern, and needs to be approached with due recognition of the difficulties in comparing areas of investment and the differential time to impact different fields of research. Understanding this question properly requires research drawing on disciplinary expertise of economists as well as social scientists with a nuanced understanding of research outputs. The value of considering this question is that it enables informed reflection about the distribution of current MRC investment and benefits accrued, and decision-making about shifts in investment. At present, the MRC does not have information that enables it to provide oversight on the distribution of its spend, and does not have information on the value accrued from spend in different areas, and thus cannot make informed decisions about resource shifts.

In order to determine the added value of the MRC's research investments, it is necessary to have complete information regarding the inputs into the research system and the temporal sequence of funding from different sources, so that the MRC can show whether its funding enables leveraging of extra funding or is merely a complementary stream. An analysis of added value should identify the particular role that MRC support provides to units or grant holders, over and above that provided by other funders, including universities. Outputs of all types need to be documented and accorded a comparable value, although this may be a non-monetary value, so that an assessment of benefit per unit of input can be made. In order to systematically analyse value for investment in the MRC's research portfolio, it is helpful to understand the distribution of spend and, for example, consider the following:

- The balance between clinical, public health and basic research
- Investment across different disease areas, for example, the balance between infectious and non-communicable diseases
- Geographical distribution of awards
- The balance of funding across different mechanisms (e.g. training, research and infrastructure)

Knowing the shape of the portfolio, and having an assessment of benefits per unit of input, will allow benefits to be compared between different areas of the portfolio, and gaps and opportunities to be

identified for improving value for money. It will also enable decisions to be made regarding whether support for some areas needs strengthening, or the potential impact of scaling back support in others.

Recommendations

14. The MRC should commission research by social scientists and economists to better understand the link between research funding and impact in the South African context, and apply the best science of science policy research provided from studies around the world.

15. The MRC should consider formally examining the question of value for money across the organisation's funding portfolio.

CHAPTER 5

FUNDING PRIORITISATION AND ALLOCATION, FUNDING STREAMS AND PERFORMANCE MANAGEMENT

FUNDING PRIORITISATION AND ALLOCATION

Past distribution of MRC funding has not been explicit. One of the changes of the revitalisation process was to redirect MRC funds to national priorities, in particular to focus the intramural units on the leading causes of mortality (whether measured by years of life lost or number of deaths). However, this approach has been criticised for neglecting some leading causes of morbidity that are not major direct causes of mortality (such as mental ill-health), potentially under-emphasising the importance of cross-cutting research to improve the health system, and de-prioritising some disease categories, such as cancer, due to segmentation of cancer types and restriction of focus to just the top 10 causes of mortality.

The revitalisation report concluded that the disease-specific intramural units proposed, based on the top 10 causes of death, should be:

- HIV
- TB
- non-communicable diseases (chiefly stroke, asthma, diabetes, and heart disease)
- injuries and violence
- childhood diseases (including malnutrition, and the main causes of perinatal and childhood mortality such as diarrhoea, pneumonia and meningitis)

Examination of what is currently funded by the MRC in the intramural and extramural environment shows, however, that this prioritisation is not the only guide to MRC funding decisions. The intramural units also include six units that work on cross-cutting issues:

- Bio-statistics
- Burden of Disease
- Health Systems
- Environment and health
- Cochrane Centre
- Alcohol, Tobacco and Other Drug Research
- Gender and Health Research

There is also MRC funding allocated to networks of Malaria and Cancer Collaborating Centres. In the extramural funding space, the top 10 causes of mortality are one of the considerations guiding decision-making, but it is far from the only factor. The panel heard concerns that the new focus was too narrow and would not allow for funding system-orientated research or cross-cutting issues. However, examination of what is being funded does not support these criticisms.

The MRC allocates funding to basic science, clinical research and public health research. The distribution of funding to the different categories across all funding streams is unknown, and this is partly because there is a lack of clarity in the definitions of these groups. The panel heard various claims that each of the three categories was being marginalised within MRC funding streams, but was unable to establish the true picture. It was clear that the intramural programme of the MRC (eight units) chiefly engages in public health research and there are currently two funded extramural units predominantly doing this work. Clinical research appears to be a much smaller part of the portfolio, with HIV clinical research (chiefly in microbicides) and the Cochrane Centre being funded intramurally. In the extramural space, funding is predominantly allocated to basic science within the extramural units and SIRs. The MRC needs to understand its funding portfolio better and we recommend that it analyses this using standard definitions so it can track the distribution of its spend.

The distribution of funding among the universities is uneven. This largely reflects differences in the extent to which universities themselves prioritise research and research excellence. Some universities, notably the University of Witwatersrand and University of KwaZulu-Natal have historically received MRC funding at a higher level, but this has declined to much lower levels in recent years. To further national goals of capacity building, the MRC should work in partnership with universities to identify and overcome institutional impediments to the growth of research, and enable access to projects of world-class scientific endeavour (through direct funding or collaboration) within which capacity can be developed.

The MRC should clearly state its priorities for supporting research. This will draw upon ideas extensively outlined in previous reports and could include, for example, the following five factors:

- A. The burden of disease in South Africa (incorporating both mortality and morbidity)
- B. Health system needs for prevention of disease and health care in South Africa
- C. The state of science in a field (with emphasis on 'essential national health research' suited to the needs of South Africa)
- D. The comparative advantage for research of this type in South Africa at the particular home institution
- E. The opportunities to amplify support of the work by attracting other funders to the research programme

RECOMMENDATIONS

16. We recommend that the MRC analyses its funding portfolio using standard definitions so it can track the distribution of its spend by type of research and health priority.
17. We suggest that the MRC offers to work in partnership with universities to assist them identify and overcome institutional impediments to the growth of research, and enable access to projects of world-class scientific endeavour (through direct funding or collaboration) within which capacity can be developed.

18. We recommend that the MRC make its priorities for supporting research explicit to enable transparency in funding decisions, and encourage the health research community to develop interests and capacity in priority areas.

FUNDING STREAMS

The MRC has established a model of allocating resources: 40% for intramural research, 40% for extramural research and 20% for administration. The MRC has six funding streams. These are the units (intramural and extramural), PhD scholarships, early career awards, SIRs, flagship projects and the SHIP innovation funds. Thus, 40% of the MRC's budget is allocated to one of these streams (intramural units) and 40% is shared among the other five streams. Intramural units receive indefinite financial support from the MRC, whilst all other funding streams are fixed term. The streams have different roles and limitations in supporting research. All funding streams will be discussed further below, except for SHIP, which was not reviewed in any detail by the panel.

INTRAMURAL AND EXTRAMURAL UNITS

In discussions with interviewees, it was difficult to discern a clear distinction between the intramural and extramural units with respect to their value to MRC and the nation. For example, some extramural units appear to be playing an essential and long-term function, such as monitoring trends in causes of death in children. Extramural unit funding is limited and the funds appear to have several main roles: they are a source of prestige and enable team building around the unit and work continuity over many years; they are valuable for leveraging other funds; they fund positions that are often difficult to support through individual grants (such as research administration and technicians); and they provide funding for items that are not covered by other grants. The panel noted the analysis of the leveraging success and publications of extramural units, which was presented in the report 'Revitalising the MRC, current state of the organisation and a proposal for the way forward'. This shows that current extramural units leverage between 2 and 20 times the funding contribution they receive from the MRC. Whilst this appears beneficial, given the very small contribution from the MRC at this time (mostly below R1 million per annum), it has meant that quite a few extramural units receive very little total funding.

The position of extramural units within universities enables them to capitalise on human and institutional resources of a larger research community in the university and means a lower investment per research unit by the MRC. In other words, the available resources for research can go further and meet more health needs by emphasising extramural settings. The advantages of intramural settings are the durability of commitment, opportunity for direct oversight by the MRC of the research programme, an opportunity to conduct research from multiple provinces within South Africa, and (in principle, at least) tighter connectivity to national health needs and greater resources for engagement in activities related to research translation into policy impact.

The discussions have shown that the value of support to extramural units from the MRC is clearly out of proportion to the monetary value of this support, and there is a considerable opportunity for a multiplier effect of the MRC brand. This suggests that it is important for the MRC to consider how it could best use its brand to maximise influence and as part of this, revisit the question of what should be supported intramurally versus extramurally. The panel considers that the criteria for intramural units should be that:

- the unit performs a function that is of national importance and requires a long-term investment, whether this be a research function or providing a knowledge platform (such as Burden of Disease surveillance)
- the research area should be one that is not suitable to be located within a university
- the research area is unattractive to any university
- it is unfeasible to conduct the research from one university for reasons of geography
- the research can be most effectively designed and conducted from within the MRC.

It also considers that a strategic case could be made for supporting an intramural unit to develop expertise in a new or under-resourced discipline, possibly for a limited time, before migration to a university. In contrast, extramural units supported should clearly be centres of research excellence on health priorities.

The topics covered by intramural research units do not all clearly meet the standards suggested for deciding whether a unit should be an intramural one or an extramural one. Allocations of money and effort should be based on the opportunity to make progress on key health burdens - diseases and problems with high consequence for the burden of illness and with high promise of scientific progress would gain priority over those that lack these attributes. Over time, this could well lead to a different distribution of resources between and among intramural and extramural research centres.

Unit performance management

There is an expectation that extramural units have a lifetime of 15 years. While the reasoning behind this policy is clear, it appears that the policy is implemented inconsistently and some units are approaching their 20-year review. The benefit of a hard-and-fast stop is that all funding can be discontinued without discussion, and those who are succeeding have external funds to continue their work. However, even though MRC funds for extramural units are limited annually, they amount to a considerable investment over a 15-year period, and so it is essential that the performance of extramural units is actively managed by the MRC. The review panel learned that extramural unit directors were very unclear about what the MRC expected of them. Although quarterly output reports and Annual Report contributions are required from units, no feedback is given to the unit director on these. In contrast, intramural unit directors have annual cycles of performance assessment and management. We suggest that all units should have active performance assessment and management by the MRC, and this should include a common core of measures that are applied to everyone, as well as a variable measure based on agreed upon objectives that relate to the specific unit environment. This will enable more rigorous engagement with units at their major 5-yearly review and provide context in which it would be fair to operate a policy such that that renewal of a unit after each 5-year period will not be automatic. We recommend that there is a more even handling of extramural and intramural units, and in this respect, suggest that there may be a sunset period after a 5-yearly review for some intramural units during which there should be an incremental reduction in resources with a view to closing the unit or moving to a university, and to allow affected staff to make alternative arrangements.

The panel was told that there is an intention to end the 5-yearly reviews of intramural units and instead provide each with a scientific advisory board that would provide on-going support. Setting up the first of these boards has thus far proved difficult. There is a globally recognised difficulty in

getting appropriately skilled people to undertake reviews and serve on advisory panels. Recognising this, the panel advises that the MRC draw on international and local resources judiciously. We advise a return to properly constituted 5-yearly review panels with rigorously conducted reviews of intramural and extramural units. Moreover, we suggest that there should not be a full review of extramural units at the end of the 15-year funding period as no funding decision is to be taken. Unit review panel members should all be researchers of excellence, at least one should be an expert in the field of the unit and at least some of the members should review more than one unit in a given year so they have some comparability. In addition, panel members should be given information about the performance of other units so it is clear what is expected from a well-performing unit. We suggest that all units (intramural and extramural) should be asked at reviews to present their strategic vision and projected outputs for the coming 5 years, these should be tailored to units, and the units should be held accountable for achieving these outputs.

The most recent round of extramural unit applications restricted the number of units per university and limited universities to submitting a maximum of two applications to the MRC. Whilst this has the advantage of ensuring university support for those applications advanced, the panel heard very widespread unhappiness about this process. This was chiefly because the process required universities to take on the task of second guessing the priorities of the MRC and its portfolio balance decisions. The process also did not seem to prioritise excellence in a way that is essential to attain the best value for money from resources in health research. The panel suggests that in future, universities should not be asked to play this role in terms of extramural unit applications. Instead, there could be a two-stage process in which expressions of interest are freely invited and shortlisted by the Scientific Advisory Committee (see above), which will then make the final recommendations on units. Those shortlisted should be invited to submit full applications with national and international peer review, and reviewers should be asked to review multiple applications (a minimum of three) so that there is some scoring comparison. Applications should include a section on the expected impact of the research and efforts to be made to maximise this. In view of the very substantial investment in research units, the panel believes that funding should, in the first instance, be allocated on the basis of research excellence in priority areas, with other considerations being secondary to this.

RECOMMENDATIONS

19. The MRC should review the criteria for distinction between intramural and extramural units, and ensure these are clear and disseminated. These should be considered over time when making decisions about migration of intramural units out of the MRC.
20. The MRC should apply its rule of supporting extramural units for a maximum of 15 years consistently.
21. The MRC should develop performance criteria for extramural units and apply these, and provide feedback annually, as is done for intramural units.
22. We recommend that a distinction be made between unit performance assessment and management, and reporting on the productivity and quality of work of the MRC overall. Performance assessment should follow a layered approach with core indicators that apply to all

units, together with additional performance measures specific to particular research environments.

23. The MRC should hold all units accountable for working towards an agreed strategic vision and projected 5-yearly outputs.
24. We recommend ceasing efforts to establish scientific advisory boards for intramural units and a return to 5-yearly reviews by appropriately constituted and prepared panels.
25. We recommend the use of a two-stage process for unit applications with shortlisting of expressions of interest by the Scientific Advisory Committee, which will make the final funding recommendations after formal peer review. Universities should not be gatekeepers in the process.
26. We recommend that the primary consideration in decisions around funding new extramural units should be to support research excellence in priority areas.

OTHER FUNDING MECHANISMS

Scholarships

The majority of MRC scholarship funding is currently provided to clinician PhDs and this is strongly supported by stakeholders who perceive that this meets the country's need to train more clinicians in research. We note that PhDs are perceived to be a much better investment than Masters level scholarships, although we acknowledge that some doctoral students also fail to complete their studies and others do not pursue careers in science. The MRC's PhD scholarships complement those from other sources for non-medical health researchers. They are important for encouraging a pool of incoming science talent and require relatively smaller investment per capita. The MRC should consider support for conjoint MD-PhD programmes of study, where universities are willing. It should also recognise that support for mentors is an important part of making the doctoral and post-doctoral stage programmes work successfully, thus supported units are particularly well placed to train PhD students.

The panel supports the fairness of the current process of scholarship decision-making by a panel that has reviewed all applications, and takes into account the diversity of the candidate and institution, the novelty and importance of the project, and whether the supervisor is currently research active and has a track record in PhD supervision. The panel recommends that being currently registered should be made an explicit requirement for funding, as it provides some assurance of student commitment, the quality of the project and university support for the research.

Career awards

Career awards are very strongly appreciated and the panel frequently heard the request for there to be more of these given each year. Currently, only between two and three early career awards are

given each year, and these serve to support salary and provide a bursary for key research costs in the early career phase. Providing support for early career scientists is very good value, in that they are committed to research careers, and the cost is lower than that for supporting more senior scientists.

Self-initiated research grants

The self-initiated research grants (SIRs) support emerging researchers, post-PhD, and play a very important role in this regard. However, the amount is limited and so universities regularly use them to supplement funding from other sources. The panel heard that when used to leverage funds, SIRs can be highly valuable platforms for undertaking research and publishing, and to train masters and PhD students. However, this is not always possible, and the role of SIRs in clinical and public health research is limited by the size of the grant available. The management burden of these awards needs to be kept commensurate to their value. However, it is essential that there is proper end-of-grant reporting of funds leveraged, publications and students trained through this mechanism.

There are about 200 applications per annum for SIRs and finding reviewers for this number of applications has been a challenge, notwithstanding the administrative advantages of the on-line grant submission and review system. The use of subject-specific review panels, with a balance of internal and external scientific members, for review and decision-making for small SIRs (with a total budget of perhaps \leq R1 million), would alleviate the administrative burden of organising external peer review. We suggest reserving formal external review processes for decisions related to larger grants, such as for flagship projects.

Flagship projects

The MRC has funded flagship projects on one occasion, which are self-initiated research projects with substantial grants. They are major scientific endeavours that are positioned to generate knowledge to answer important questions. The panel is not aware of any plans to repeat the once-off funding opportunity for these projects.

The MRC's portfolio of funding overall supports the development of scientists through training and early career support (including through SIRs), and platforms from which funds for projects can be leveraged (the units). The flagship mechanism is the only one that provides funding for investigating major scientific questions. The clear disadvantages are that it restricts South African control of the research agenda, constrains access to the best learning environments for young researchers, and limits research mostly to areas for which international funds are easier to secure. The panel heard that high-priority research areas, including non-communicable disease research, burden of disease and mental health research, are not easy to fund through international sources and thus are relatively underfunded in South Africa.

Internationally, science councils regard providing funding for emerging researchers, supporting platforms of excellence (units) that provide continuity and a foundation for leveraging funding, and supporting major scientific endeavours as all part of their responsibility. However, they seek to balance these so that funding is provided to support the pursuit of important scientific questions. The panel recommends that that MRC reconfigure its portfolio to make more funds available for important projects that are fully funded by the MRC through substantially increasing the limits on

SIRs (we suggest to R2 million over 3 years) and providing a funding mechanism through which the much larger flagship projects can be funded each year based on a competitive application process. It must be stated that this funding is only for new collaborative, interdisciplinary research projects.

MRC support for developing centres of excellence at historically disadvantaged institutions

The panel endorses the importance of transforming the South African science system and of distributional justice. It supports the continued prioritisation of candidates from historically disadvantaged backgrounds for PhD scholarships, early career awards and SIRs. However, it also notes that over the last 20 years, the apartheid-era alignment of university and staff race has altered, and students from previously disadvantaged backgrounds increasingly are drawn to established centres of excellence for higher degrees and post-doctoral research wherever these are found.

Centres of health research excellence in historically disadvantaged institutions (HDIs) are unusual. The panel endorses the MRC's goal to seek to build these, and suggests that the MRC considers a resource allocation strategy that assigns a defined pool of funding to HDIs to help build the staff's scientific capacities and facilities, and strengthen their grantsmanship. Beyond this ring-fenced pool, we recommend that prioritising the quality of science should continue to be the main criterion for allocating resources as this will serve the long-term interests of health science in South Africa and will ultimately achieve sustained transformation of the science system in the context of the multiple affirmative action mechanisms.

RECOMMENDATIONS

27. The panel recommends that that the MRC reconfigure its portfolio to make more funds available for important projects that are fully funded by the MRC through substantially increasing the limits on SIRs (we suggest to R2 million over 3 years) and providing a funding mechanism through which the flagship projects of excellence can be funded each year based on a competitive application process. It must be stated that this funding is only for new collaborative, interdisciplinary research projects.
28. The MRC should develop a funding stream (a ring-fenced pot) aimed explicitly at developing centres of excellence at HDIs.
29. The panel suggests that being currently registered should be made an explicit requirement for PhD funding as it provides some assurance of student commitment, the quality of the project and university support for the research.
30. We suggest reducing the administrative burden related to small SIR application reviews by using subject-specific review panels, with a balance of internal and external scientific members, and reserving formal external peer review for large grants.
31. The MRC should consider increasing the number of larger awards in order to maximise its impact and to ensure greater value for money.

32. We recommend that a system is developed to encourage completeness of reporting of outputs of research, including those after the close of the project, and that this should be incentivised through a process whereby previous outputs are explicitly considered in deciding about future awards.

CHAPTER 6

THE SOUTH AFRICAN MRC OVER THE NEXT 5 YEARS

The revitalisation process of the MRC and substantial increases in funding from the National Treasury and external donors are roundly supported and have positioned the MRC to make unprecedented advances in medical science in South Africa over the coming years. The challenge now is to transition South African health research from 'good to great' and to firmly anchor the MRC as an institution to develop and flourish in its role as a champion and steward of health research in the country.

In order to achieve this, it is essential that the Board and Executive completes the revitalisation process, focuses on improving staff morale, pursues administrative efficiencies and ensures that support services are optimally enabled to support the organisation's scientific endeavour. Anchoring the MRC to provide stability for the future requires some strengthening of governance, including revising the MRC Act to clarify the division of responsibilities between the Board and the Executive. We recommend establishing a learned scientific advisory committee to support the President, and strengthen advice on unit performance management and funding decisions. We do not support changes to the requirement that the President should be a medical doctor.

The MRC is well positioned to perform the role of champion of health science in South Africa and must move to occupy this leadership role. This involves advocating for a stronger investment in science based on evidence of scientific, policy and other returns on investment, deepening understanding of the health spend across the country so that there is strong evidence of gaps and priorities, and convening stakeholders to plan emerging research agendas to advance knowledge to address the major health problems facing the country in order to strategically assist in decisions of the DoH.

The MRC's vision of supporting high-quality health sciences research is strongly supported, but the MRC needs to broaden its understanding of the impact of its funded work and how to stimulate, recognise and reward this within the health science system. The challenge is to recognise diversity of outputs, outcomes and impacts, and report these, without losing the focus to strive for the highest possible impact and to make a fair comparison between them. We recommend that the MRC deepens external understanding of the diverse products and benefits from health science investment, as this is essential to continue to motivate for enhanced resources.

The MRC needs to develop its thinking around how best to secure value for money for its health research investment. Rational decision-making requires information to enable comparison across funding streams as well as the development of explicit priorities for the organisation and consensus on the types of research that should be supported intramurally. Recognising the disproportionate investment in units within the funding portfolio, there needs to be a much more active process of performance management against clear but tailored standards, and commitment to identify and close underperforming intramural and extramural units. The MRC should seek to free up resources for more flagship and larger, targeted self-initiated research projects, so that there is a much greater

South African control over the local research agenda. Major long-term research investment in units should support research excellence in defined priority areas.

The MRC must continue to invest in people. Funding of high-quality research also supports optimal training environments for young researchers within projects of excellence. The career development awards and clinician PhD scholarship programmes are essential for building the health science field. Working to strengthen health research in HDIs is also a key part of the overall investment.

MRC REVIEW 2014 PROGRAMME

Panel Members:

Prof. Hoosen (Jerry) **Coovadia** – Chair

Dr Ian **Viney**, UK MRC

Dr Harvey **Fineberg**, IOM

Prof. Rachel **Jewkes**, SAMRC

Prof. Valerie **Mizrahi**, UCT

Dr Jimmy **Whitworth**, WT UK

18–25 November 2014

Day 1 – Tuesday, 18 November 2014

Time	Activity	Location	Comments
08h00–14h00	Arrival of panel members	Cape Town International Airport	Hotel Verde Shuttle transfer from CPTIA to hotel
15h00–16h00	Panel briefing by chairperson; consideration of general review objectives; discussion of TOR; discussion of work schedule and assignments; consideration of documentation; process issues; opening discussions	Hotel Verde 15 Michigan Street Airport Industria Cape Town Boardroom	Board room at Hotel Hotel contact: Chrisna van Dyk
16h00–18h00	Discussion with SAMRC President	Hotel Verde 15 Michigan Street Airport Industria Cape Town Boardroom	Board room at Hotel Hotel contact: Chrisna van Dyk

Day 2 – Wednesday, 19 November 2014

Time	Activity	Location	Comments
08h30–09h30	Further document review and preparation for interview sessions	Loerie Boardroom, SAMRC CC, Cape Town	
09h30–10h00	Dr Thabi Maitin, MRC Scholarships Unit	Loerie Boardroom, SAMRC CC, Cape Town	In-person
10h00–11h00	Prof .Charles Parry, Director: MRC Alcohol, Tobacco and Other Drugs Research Unit	Loerie Boardroom, SAMRC CC, Cape Town	In-person
11h00–11h45	Prof. Sabiha Essack, Chair: South African Committee of Health Sciences Deans (SACHOSD)		Video Conference: SAMRC Westville, KZN)
11h45–12h15	Open		
12h15–13h00	Lunch break		
13h00 – 13h30	Mr Clive Glass, Division Manager: MRC SIR Grants Dr Niresh Bhagwandin, Executive Manager: MRC Extramural Units	Loerie Boardroom, SAMRC CC, Cape Town	In-person
13h30–14h15	Prof. Jimmy Volmink, Dean: Medical and Health Sciences, Stellenbosch University Dr Tamara Kredo, Deputy Director: South African	Loerie Boardroom, SAMRC CC, Cape Town	In-person

	Cochrane Centre		
14h15–15h00	Prof. Wim de Villiers, Dean: Health Sciences, University of Cape Town	Loerie Boardroom, SAMRC CC, Cape Town	In-person
15h00–15h55	Prof. Salim Abdool Karim, Director: CAPRISA	Loerie Boardroom, SAMRC CC, Cape Town	In-person
16h00–17h00	Open		

Day 3 – Thursday, 20 November 2014

Time	Activity	Location	Comments
08h30–10h00	Review team meets SAMRC Board ExCo	Loerie Boardroom, SAMRC CC, Cape Town	Video conference: SAMRC Pretoria
10h00–10h45	Ms Glaudina Loots, Director: Health Innovation, Department of Science and Technology	Loerie Boardroom, SAMRC CC, Cape Town	In-person
10h45–11h30	Prof. Ronnie Anderson, Director, MRC Extramural Inflammation and Immunity RU, University of Pretoria		Video conference: SAMRC Pretoria)
11h30–12h15	Dr Richard Gordon, Director: Strategic Health Innovation Partnership (SHIP)	Loerie Boardroom, SAMRC CC, Cape Town	In-person
12h15–13h00	<i>Lunch</i>		
13h00–18h30	Interviews with 11 Intramural unit directors	Loerie Boardroom, SAMRC CC, Cape Town	30 min per interview
13h00–13h30	Prof. Leslie London, Head: Public Health Medicine, UCT		Cape Town telephone interview: Contact: Leslie London +27 21 406 6524
13h30–13h45	Prof. Carl Lombard, Director: MRC Biostatistics Unit	Loerie Boardroom, SAMRC CC, Cape Town	In-person
13h45–14h00	Prof. Rachel Jewkes, Director: MRC Gender and Health Research Unit	Loerie Boardroom, SAMRC CC, Cape Town	In-person
14h00–14h30	Prof. Mohamed Seedat, Director: MRC Violence, Injury and Peace Research Unit		Video conference: VIPRU/UNISA ISHS offices, Lenasia
14h30–15h00	Prof. Gita Ramjee, Director: MRC HIV Prevention Research Unit		Video Conference: SAMRC Westville, KZN
15h00–15h30	Prof. Angela Mathee, Director: MRC Environment and Health Research Unit		Video conference: SAMRC Johannesburg
15h30–15h45	Ms Cathy Matthews, Director: MRC Health Systems Research Unit	Loerie Boardroom, SAMRC CC, Cape Town	In-person

15h45–16h00	Prof. Debbie Bradshaw, Director: MRC Burden of Disease Research Unit	Loerie Boardroom, SAMRC CC, Cape Town	In-person
16h00–16h15	Prof. Paul van Helden, Director: MRC Centre for Tuberculosis Research	Loerie Boardroom, SAMRC CC, Cape Town	In-person
16h15–16h30	Prof. Andre Kengne, Director: MRC Non-Communicable Diseases Research Unit	Loerie Boardroom, SAMRC CC, Cape Town	In-person

Day 4 – Friday, 21 November 2014

Time	Activity	Location	Comments
08h30–16h30	Interviews with extramural unit directors	Loerie Boardroom, SAMRC CC, Cape Town	30 min per interview
08h30–09h00	Prof. Kelly Chibale – Drug Discovery & Development RU		In-person
09h00–09h30	Prof. Valerie Mizrahi – Molecular Mycobacteriology RU		In-person
09h30–10h00	Dr Neil Davies – Interuniversity Cape Heart RU (Zilla proxy)		In-person
10h00–10h30	Open		
10h30–11h00	Prof. Aletta Schutte, SARChI Chair: Early detection and prevention of CVD in South Africa, Director: Hypertension in Africa Research Team (HART), Professor of Physiology, NWU		
11h00–11h30	Prof. Tanya Douglas – Medical Imaging RU		In-person
11h30–12h00	Prof. Alan Christoffels – Bioinformatics Capacity Development RU		In-person
12h00–13h00	<i>Lunch</i>		
13h00–13h30	Prof. Arie Katz – Receptor Biology RU		In-person
13h30–14h00	Prof. Dan Stein – Anxiety & Stress Disorders RU		In-person
14h00 – 14h30	Open		
14h30–15h00	Prof. Shane Norris – MRC/Wits Developmental Pathways for Health Research RU		Video Conference: SAMRC Pretoria
15h00–15h30	Prof. Robert Pattinson – Maternal and Infant Health Care Strategies RU		Video Conference: SAMRC Pretoria
15h30–16h00	Open		
16h00–16h30	Prof. Steve Tollman – Rural Public Health and Health Transition RU		Johannesburg telephone interview:

Day 5 – Monday, 24 November 2014

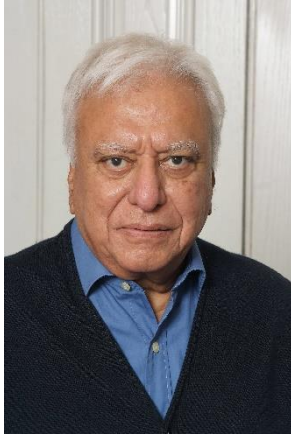
Time	Activity	Location	Comments
09h30–10h00	Dr Jane Goudge – Health Policy RU		Johannesburg telephone interview
10h00–11h00	Prof. Tiaan de Jager, Deputy Dean: Research, Faculty of Health Sciences, UP		Video Conference: SAMRC Pretoria
11h00–11h30	Prof. Jeff Mphahlele – Diarrhoeal Pathogens RU		Video Conference: SAMRC Pretoria
11h30–12h00	Prof. Bavesh Kana, Head: Wits Node of the CBTBR, WITS		Johannesburg telephone interview
12h00–12h30	Open		
12h30–13h00	Prof. Angela Woodiwiss, Co-Director: Cardiovascular Pathophysiology and Genomics Research Unit, WITS		Johannesburg telephone interview
13h00–13h30	Prof. Keertan Dheda, Head: Professor of Respiratory Medicine and Head of the Lung Infection and Immunity Unit, UCT		Cape Town telephone interview:
13h30–14h00	Lunch		
14h00–14h30	Prof. Shabir Madhi, Director, MRC Extramural - Respiratory and Meningeal Pathogens RU		Johannesburg telephone interview
14h30–15h00	Prof. Lucille Blumberg, NHLS, NICD		Johannesburg telephone interview
15h15–16h45	SAMRC Executive Management Committee	Loerie Boardroom, SAMRC CC, Cape Town	In-person & Video Conference: SAMRC Pretoria

Day 6 – Tuesday, 25 November 2014

Time	Activity	Location	Comments
08h30–12h30	Debriefing and report writing	Loerie Boardroom, SAMRC CC, Cape Town	Video conference: SAMRC Pretoria
12h30–13h30	Lunch break		
13h30–15h00	Debriefing and report writing	Loerie Boardroom, SAMRC CC, Cape Town	
15h00–16h00	SAMRC President – exit interview with panel members	Loerie Boardroom, SAMRC CC, Cape Town	Video conference: SAMRC Pretoria
16h00 -	Review panel departs		

Annexure B

Bios of panel members



Prof. Hoosen (Jerry) Coovadia

Professor Hoosen (Jerry) Coovadia is currently a Director at MatCH Health Systems (Maternal, Adolescent and Child Health). MatCH Health Systems with PEPFAR funding (through USAID) supports the KZN Department of Health in their provision of HIV, TB and related diseases treatment, prevention and care services in the eThekweni and uMkhanaykude districts.

Jerry is also the Chairperson of the Board of the KZN Children's Hospital Trust and a Commissioner for the National Planning Commission for the Presidency of the Republic of South Africa. He also holds the title of Emeritus Professor of Paediatrics and Child Health and Emeritus Victor Daitz Professor of HIV/Aids Research at the University of KwaZulu-Natal. He was the Scientific Director at the Doris Duke Medical Research Centre at the University of Natal and the Director of BioMed HIV/AIDS Research at the Nelson Mandela School of Medicine. He also held the International Vice-Chair of the Paediatric AIDS Clinical Trials Group (IMPAACT), the Deputy Chair of Transitional National Development Trust, Co-Chair of the Advisory Board to the Artists for a New South Africa's Amandla AIDS Fund and Member of the South African Academy of Science. He has also been a member of a number of UN Committees.

He holds Honorary Doctorates from the Universities of Cape Town, Kwa-Zulu Natal and the, Witwatersrand. A Master of Science from the University of Birmingham, UK. A FCP from the College of Medicine of South Africa and a Bachelor of Medicine & Bachelor of Surgery from the University of Bombay, India.

He has published more than 338 papers on factors causing morbidity, disability and mortality among Africa's children.

He has received a number of awards including the Nelson Mandela Award for Health and Human Rights (co-recipient with Judge Edwin Cameron), The Order of the Star of S.A for Contributions to Democracy & Health presented by former President Nelson Mandela, The 2013 Scientific Freedom and Responsibility Award from the American Association for the Advancement of Science (AAAS), The Lifetime Achievement Award from the HIV Congress in India, The Lifetime Achievement Award from the National Research Foundation and most recently the SAMRC President's Award for Exceptional Contributions to Medical Research.



Harvey V. Fineberg

Harvey V. Fineberg is president-designate of the Gordon and Betty Moore Foundation. Currently, and until he takes office at the beginning of January 2015, he holds the Presidential Chair for 2014-2015 as Visiting Professor at the University of California, San Francisco, where he is based in Global Health Sciences. He served as president of the Institute of Medicine from 2002 to 2014 and as provost of Harvard University from 1997 to 2001, following thirteen years as dean of the Harvard School of Public Health. He has devoted most of his academic career to the fields of health policy and medical decision-making. His past research has focused on the process of policy development and implementation, assessment of medical technology, evaluation and use of vaccines, and dissemination of medical innovations.

Fineberg serves on the boards of the William and Flora Hewlett Foundation, the China Medical Board, and the Carnegie Endowment for International Peace, which he chairs. He helped found and served as president of the Society for Medical Decision Making and also served as consultant to the World Health Organization.

Fineberg is co-author of the books *Clinical Decision Analysis*, *Innovators in Physician Education*, and *The Epidemic That Never Was*, an analysis of the controversial federal immunization program against swine flu in 1976. He has co-edited several books on such diverse topics as AIDS prevention, vaccine safety, understanding risk in society, and global health. He has also authored numerous articles published in professional journals. Fineberg is the recipient of several honorary degrees, the Frank A Calderone Prize in Public Health, the Henry G. Friesen International Prize in Health Research, and the Harvard Medal, awarded by the alumni association of the university from which he earned his bachelor's and doctoral degrees.



Dr Ian Viney

Dr Viney is Director of Strategic Evaluation and Impact at the UK Medical Research Council (MRC), and currently on part-time secondment to the UK Government Office for Life Sciences.

The MRC strategic evaluation programme, initiated in 2008, seeks to strengthen the assessment of progress with the MRC strategic plan, and provide improved evidence for evaluating the progress, productivity and overall impact of the MRC research portfolio. A significant element of this programme has been the development of an online system to capture research outputs, outcomes and impacts. This approach is now provided as a service by Researchfish Ltd and more than 95 UK research organisations now subscribe to the system.

Visit the MRC website and read about the progress and productivity of MRC research <http://www.mrc.ac.uk/AchievementsImpact/Outputsoutcomes/index.htm>



Dr Jimmy Whitworth

Jimmy Whitworth became head of population health at the Wellcome Trust in 2013, having previously has been Head of International Activities since 2004. He is responsible for strategy, policy and developing the scientific portfolio for research on population science and public health research in the UK and in low and middle income countries. Previously he was Professor of International Public Health at the London School of Hygiene and Tropical Medicine.

He is a physician, qualifying from Liverpool University in 1979, and obtaining FRCP in 1996. He was elected a Fellow of the Academy of Medical Sciences in 2009. He attended the DTM&H course at Liverpool School of Tropical Medicine in 1985 where he was awarded the Blacklock Medal for Parasitology and Entomology.

Jimmy specialises in infectious diseases, epidemiology and public health. Previous roles include working in The Gambia for Save the Children Fund on providing primary and secondary health care for Upper River Division. Subsequently he led investigations into ivermectin for onchocerciasis in Sierra Leone for the Medical Research Council, work for which he was awarded an MD with distinction in 1993. He was Team Leader for the Medical Research Council Programme on AIDS, based at the Uganda Virus Research Institute in Entebbe, from 1995 until 2002.

When not living and working in Africa, Jimmy has been an academic staff member, specialising in HIV and vector borne parasitic diseases, at both the Liverpool School of Tropical Medicine and the London School of Hygiene and Tropical Medicine.



Prof. Valerie Mizrahi

Prof. Mizrahi is director of the Institute of Infectious Disease and Molecular Medicine and a Professor in the Department of Clinical Laboratory Sciences at the University of Cape Town (UCT). She also directs the MRC/NHLS/UCT Molecular Mycobacteriology Research Unit and heads the UCT node of the DST/NRF Centre of Excellence for Biomedical TB Research. She was an International Research Scholar of the Howard Hughes Medical Institute (HHMI) from 2000-2010, and currently, is a Senior International Research Scholar of the HHMI. Her research focuses on the physiology and metabolism of *Mycobacterium*

tuberculosis of relevance to TB drug resistance and drug discovery. She is a Fellow of the American Academy of Microbiology, and Royal Society of South Africa, an Associate Fellow of the Third World Academy of Sciences, and a Member of the Academy of Science of South Africa. Her major awards include the 2013 Christophe Mériex Prize from the Mériex Foundation and Institut de France, the Order of the Mapungubwe (Silver, 2007) from the State President of South Africa, the 2006 Gold Medal of the SA Society for Biochemistry and Molecular Biology, and the 2000 Unesco-L'Oréal For

Women in Science Award (Africa & Middle East). She currently serves on the Scientific Advisory Boards of K-RITH, Innovative Medicines for TB (EPFL, Lausanne), and the Discovery Expert Group of the Bill & Melinda Gates Foundation and has served on the Advisory Boards of the Global Alliance for TB Drug Development (New York) and the ICGEB (Trieste). She has published more than 120 papers in the fields of organic chemistry, biochemistry and molecular mycobacteriology and has trained 50 postdoctoral fellows and postgraduate students.



Prof. Rachel Jewkes

Professor Rachel Jewkes is the Director of the South African MRC's Gender and Health Research Unit. She was acting Vice-President of the South African Medical Research Council from 2013-14 and is an Honorary Professor at the University of the Witwatersrand School of Public Health. She is an NRF A rated scientist and was a winner of the MRC's gold medal in 2014. She is a member of the WHO Expert Advisory Panel on Injury and Violence Prevention and Control, and the WHO's Strategic and Technical Advisory Committees

on HIV, and for the WHO Department of Reproductive Health and Research. She was a former member of the PEPFAR Scientific Advisory Board and served on the Steering Committee of the WHO Multi-country Study on Women's Health and Domestic Violence

She is the Director of the DFID-flagship 'What Works to Prevent Violence? Global Programme', which seeks to advance knowledge on prevention of violence against women and girls in Africa, the Middle East and Asia. This programme is supporting 18 projects in 17 countries and includes 12 RCT evaluations of innovative prevention programmes. She was also lead technical advisor to the UN Multi-Country Study on Men and Violence in Asia and the Pacific, and Principal Investigator on a study on violence and health in Papua New Guinea. She is also the Secretary of the global Sexual Violence Research Initiative.

Rachel trained in the UK as a public health physician and undertook her MSc and MD at the London School of Hygiene and Tropical Medicine. She has spent her career researching gender-based violence and gender inequity and health, South Africa and globally. Her major contributions have been around understanding the interface between gender-based violence, gender inequity and HIV; and developing methods to study rape perpetration in the general population; and in gender-based violence prevention. Her work has spanned epidemiology, anthropology, clinical research, and research in the health, education and justice sectors. She is an author of over 160 peer reviewed journal publications, and more than a 100 book chapters, reviews and technical reports.

Annexure C

EXTRACT FROM THE MRC ACT, No. 58, 1991

Functions, powers and duties of MRC

4. (1) The functions, powers and duties of the MRC shall be to achieve its objects with the means at its disposal, and for the purposes of achieving those objects the MRC may-
- (a) (i) undertake research of its own accord; or
 - (ii) undertake research on behalf of the State or any other authority, or on behalf of any person or institution, or support such research financially;
 - (b) operate and maintain national research facilities assigned to it by the Minister;
 - (c) promote co-operation between the Republic and other countries with regard to research, development and technology transfer;
 - (d) develop and utilize the technological expertise in its possession or make it available to any person or institution in the Republic or elsewhere;
 - (e) promote the training of researchers and related personnel, and for this purpose grant study bursaries and loans, and make monetary contributions for research programmes;
 - (f) establish and control research laboratories and other facilities in those fields of research which the Board may from time to time approve;
 - (g) co-operate with persons and institutions undertaking research in other countries, by the exchanging of scientific knowledge by means of international meetings and other programmes;
 - (h) make grants-
 - (i) to universities, technikons, colleges, museums and scientific institutions in aid of research by their staff and to establish channels for the exchange and supplementation of knowledge and expertise;
 - (ii) to universities, technikons, colleges, schools, museums and other institutions or to persons associated therewith, for research and development or for the provision of facilities with a view to research and development;
 - (i) participate in joint research operations with departments of State, universities, technikons, colleges, museums, scientific institutions and other persons;
 - (j) co-operate with educational authorities and scientific or technical societies or industrial institutions representing employers and employees, respectively, for the promotion of the instruction and training of researchers, technical experts and other supporting personnel in universities, technikons, colleges and schools;
 - (k) enter into agreements with any person or, subject to the provisions of section 5, with any government or administration, upon such conditions as the MRC and that person, government or administration may agree;
 - (l) purchase, hire, possess or otherwise acquire movable property, and let, pledge, encumber or dispose of that property;
 - (m) hire or let services and immovable property;
 - (n) perform or exercise any function or power entrusted to or conferred upon the MRC in terms of any other law;
 - (o) with the approval of the Minister, acting with the concurrence of the Minister of Finance-

- (i) purchase, possess or otherwise acquire immovable property and encumber or dispose of that property;
 - (ii) borrow money from time to time on such terms and conditions as the Board may approve, by way of loans from any source and against the security which the Board may deem fit; and
 - (iii) on its own, or in association with any person, establish a company for the purpose of developing or exploiting in any manner any invention or technological expertise, and for this purpose acquire an interest in or control over a company or statutory body referred to in section 1 of the Exchequer Act, 1975 (Act No. 66 of 1975);
 - (p) generate income by the marketing of its biomedical expertise and technology;
 - (q) subject to the provisions of any other law relating to the regulating of and control over medicines, related substances and medical equipment, on its own or in association with any person, test and evaluate such medicines, related substances and medical equipment pertaining to preventative or curative medical care for medical scientific purposes or the promotion of technology in general;
 - (r) in addition to any function, power or duty that the MRC is required or empowered to do in terms of the provisions of this Act or in terms of any other law, do everything that is conducive to the achievement of its objects or is calculated, directly or indirectly, to enhance the value of or render profitable the property or rights of the MRC.
- (2) The MRC shall, in addition to its other functions in terms of the Act or any other law-
- (a) undertake the investigations or research which the Minister may assign to it; and
 - (b) advise the Minister-
 - (i) on the determination of policy and national priorities regarding research; and
 - (ii) on development, promotion, implementation and co-ordination of research on a national basis.

ACRONYNS AND ABBREVIATIONS

ARC	Agricultural Research Council
CSIR	Council for Scientific and Industrial Research
DoH	Department of Health
DoHET	Department of Higher Education and Training
DST	Department of Science and Technology
HDI	historically disadvantaged institution
HIV	human immune deficiency disease
HSRC	Health Sciences Research Council
MRC	Medical Research Council
MRC Act	MRC Act, No. 58, 1991
NHI	National Health Insurance
NHLS	National Health Laboratory Service
NICD	National Institute for Communicable Diseases
NRF	National Research Foundation
SETI	science, engineering, technology and innovation
SHIP	Strategic Health innovation Partnerships
SIR	self-initiated research grants
TB	tuberculosis
WRC	Water Research Commission